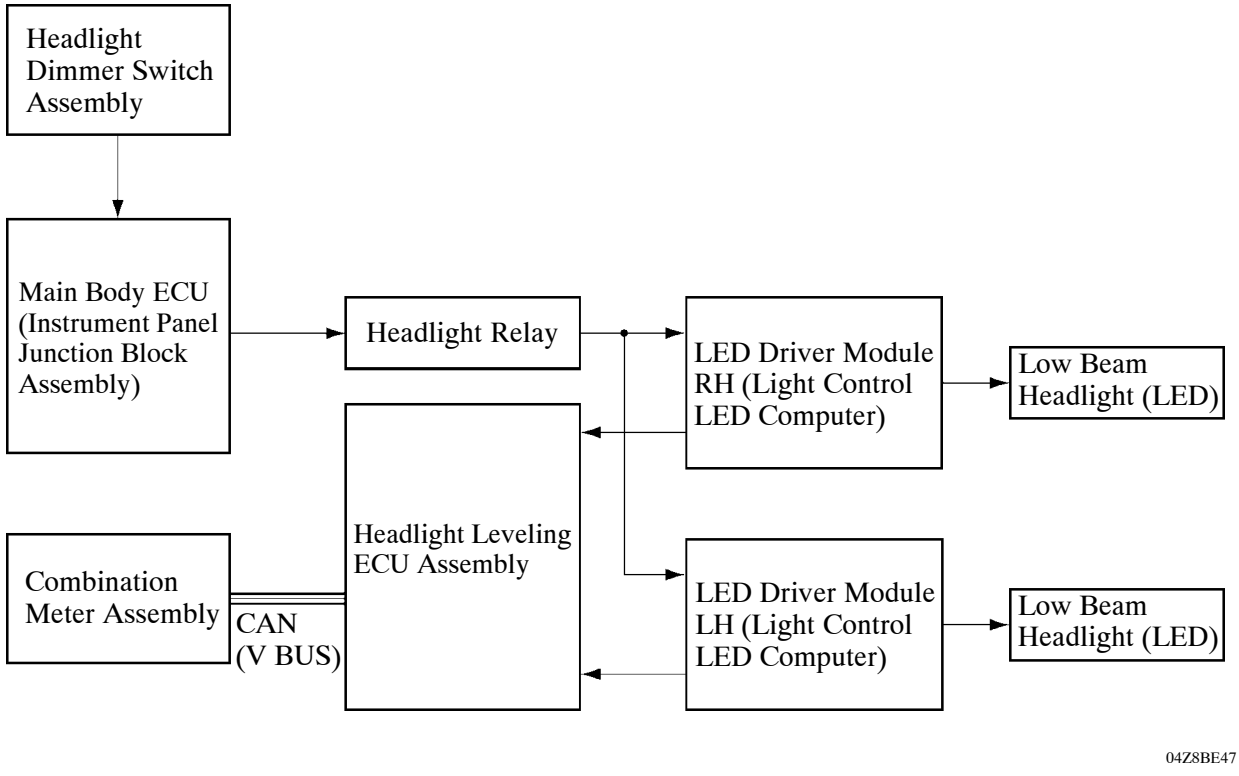
■ LED HEADLIGHT SYSTEM

LED headlight system, capable of instantly flashing, and of ensuring a long service life, is used in the low beam headlight.

▶ System Diagram ◀



▶ Function of Main Components ◀

Component		Function
LED Driver Module (Light Control LED Computer)		Supplies a constant current to the LED when power is supplied from the headlight relay. Sends a normal illumination signal to the headlight leveling ECU assembly while the headlight low beam is illuminated normally.
Main Body ECU (Instrument Panel Junction Block Assembly)		Controls the headlight relay which supplies power to the LED driver module (light control LED computer).
Headlight Leveling ECU Assembly		Determines a failure in the LED headlight in accordance with the signal from the LED driver module (light control LED computer) and light control switch conditions and outputs a warning request signal to the combination meter assembly.
Combination Meter Assembly	Multi-information Display*1	Receives the LED headlight warning request signal from the headlight leveling ECU assembly and displays a warning message.
	Headlight Warning Light*2	Receives the LED headlight warning request signal from the headlight leveling ECU assembly and illuminates LED warning light.

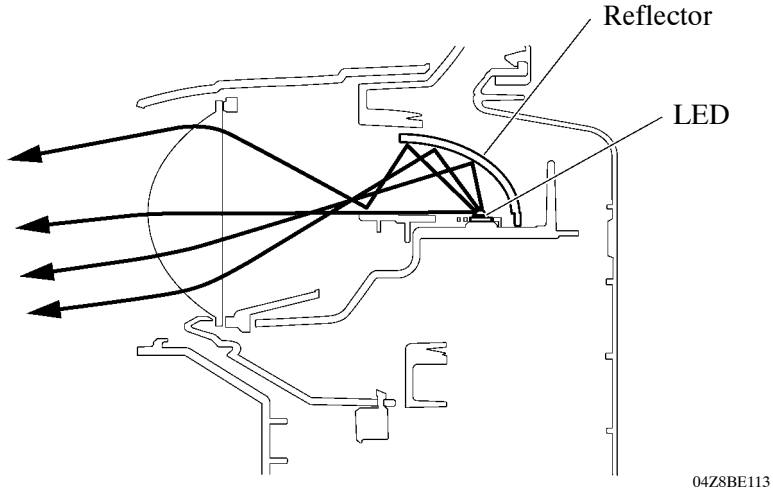
*1: Models with optitron display type combination meter assembly
*2: Models with analog type combination meter assembly

▶ System Control ◀

- When the light control switch is turned on, the LED driver module (light control LED computer) immediately turn on the LEDs (approximately 0.1 sec). In addition, by regulating the output currents flowing into the LEDs at the specified level, the LED driver modules prevent the glare of light due to voltage variation.
- If malfunctions occur in the LED headlight system, an LED driver module (light control LED computer) transmits fail signals to the headlight leveling ECU assembly. When the headlight leveling ECU assembly receives fail signals, it transmits signals to the combination meter assembly, warning the driver.

▶ Construction ◀

- The LED headlight system is used for the low beams, and this consists of the 2 projector type LED lights.
- The light from the 2 projector type LED lights are reflected by the reflector and passes through the projector, illuminating an area in the distance. At this time, the illuminated area is optimized by the shape of the reflectors and projector.



▶ Fail-safe ◀

The LED driver module (light control LED computer) executes the fail-safe actions listed below in accordance with the problem that has been detected.

Problem	Outline
Detection of Abnormal Output (Open Circuit or Short Circuit)	If an abnormal condition (open or short) occurs in the voltage that is output by LED driver module (light control LED computer), the LED driver module (light control LED computer) stops illuminating the headlights and will maintain this state until the power is reinstated. Power is reinstated by turning the light control switch from off to on.
Detection of Abnormal Input Voltage	If the voltage that is input to LED driver module (light control LED computer) deviates from the normal operating voltage (10 – 16 volts), the LED driver module (light control LED computer) stops illuminating the headlights. It resumes illuminating the headlights once the voltage reverts to the operating voltage range.

▶ Diagnosis ◀

If the headlight leveling ECU assembly detects a malfunction in the LED headlight system, the headlight leveling ECU assembly illuminates the master warning light and indicates the warning message on the multi-information display of combination meter assembly.*1 Or the headlight leveling ECU assembly illuminates the LED warning light of combination meter assembly.*2 At the same time, the Diagnostic Trouble Code (DTC) is stored in memory. The DTC can be read using the Grobal TechStream (GTS). For details, refer to the Repair Manual.

*1: Models with optitron display type combination meter assembly
*2: Models with analog type combination meter assembly